

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Evan Kirshenbaum	§	Art Unit:	2129
		§		
Serial No.:	10/734,459	§		
		§	Examiner:	Lut Wong
Filed:	December 12, 2003	§		
		§		
For:	Training Case Selection	§	Atty. Dkt. No.:	200207642-1
		§		(HPC.0578US)

**Mail Stop Appeal Brief-Patents**  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**APPEAL BRIEF PURSUANT TO 37 C.F.R § 41.37**

Sir:

The final rejection of claims 1-10 is hereby appealed.

**I. REAL PARTY IN INTEREST**

The real party in interest is Hewlett-Packard Development Company, L.P.

**II. RELATED APPEALS AND INTERFERENCES**

None.

**III. STATUS OF THE CLAIMS**

Claims 1-10 have been finally rejected and are the subject of this appeal. Claims 11-30 have been cancelled in the Amendment Under 37 C.F.R. § 41.33 submitted concurrently herewith.

Date of Deposit: <u>August 18, 2008</u>
I hereby certify under 37 C.F.R. 1.8(a) that this correspondence is being transmitted electronically to the U.S. Patent Office on the date indicated above.
<u>Ginger Youn</u>
Ginger Youn

#### **IV. STATUS OF AMENDMENTS**

An Amendment Under 37 C.F.R. § 41.33 is submitted concurrently herewith to cancel withdrawn claims 11-30. Entry of the Amendment is proper since it removes issues from appeal.

#### **V. SUMMARY OF THE CLAIMED SUBJECT MATTER**

The following provides a concise explanation of the subject matter defined in each of the independent claims involved in the appeal, referring to the specification by page and line number and to the drawings by reference characters, as required by 37 C.F.R. § 41.37(c)(1)(v). Each element of the claims is identified by a corresponding reference to the specification and drawings where applicable. Note that the citation to passages in the specification and drawings for each claim element does not imply that the limitations from the specification and drawings should be read into the corresponding claim element.

Independent claim 1 recites a processor-based method for determining difficulty measures for training cases used in developing a solution to a problem, comprising:

providing (Fig. 1:110) a set of training cases having respectively associated difficulty measures (Spec., p. 4, lines 23-27; p. 5, lines 5-17);

operating (Fig. 1:120) a candidate solution on a particular training case (Spec., p. 5, lines 18-20);

determining (Fig. 1:130) a performance measure of the candidate solution operating on the particular training case (Spec., p. 5, lines 20-30);

determining (Fig. 1:140) a credibility rating of the candidate solution, the credibility rating indicating a degree to which the performance measure is representative of the difficulty measure of the particular training case (Spec., p. 6, lines 10-27); and

modifying (Fig. 1:150) the difficulty measure of the particular training case based on the performance measure of the candidate solution operating on the particular training case and the credibility rating of the candidate solution (Spec., p. 4, line 27-p. 5, line 2; p. 6, line 28-p. 7, line 2).

## **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

- A. Claims 1-2, 4, and 6-10 Rejected Under 35 U.S.C. § 102(b) as Anticipated by Kirshenbaum, “Modeling Disk Arrays Using Genetic Programming” (Kirshenbaum).**
- B. Claims 3 and 5 Rejected Under 35 U.S.C. § 103(a) as Unpatentable Over Kirshenbaum Alone.**

## **VII. ARGUMENT**

The claims do not stand or fall together. Instead, Appellant presents separate arguments for various independent and dependent claims. Each of these arguments is separately argued below and presented with separate headings and sub-headings as required by 37 C.F.R. § 41.37(c)(1)(vii).

- A. Claims 1-2, 4, and 6-10 Rejected Under 35 U.S.C. § 102(b) as Anticipated by Kirshenbaum, “Modeling Disk Arrays Using Genetic Programming” (Kirshenbaum).**

- 1. Claims 1, 2, 4, 6-10.**

The § 102 rejection of independent claim 1 over Kirshenbaum is associated with various errors.

In the Amendment dated December 17, 2007, the “determining a credibility rating” clause of claim 1 was amended, as follows: “determining a credibility rating of the candidate solution, the credibility rating indicating a degree to which the performance measure is representative of the difficulty measure of the particular training case ~~proficiency level of the candidate solution at solving training cases.~~”

In the final rejection, the Examiner dismissed this change of the claim element as “more directed to formal matter rather than the scope of the claim.” 3/19/2008 Office Action 3. Nowhere in the final rejection did the Examiner provide any discussion of how Kirshenbaum discloses determining a credibility rating as recited in claim 1. In the previous Office Action

dated September 11, 2007, the Examiner had cited page 3 in Section 4.4 of Kirshenbaum as disclosing “determining a credibility rating of the candidate solution, the credibility rating indicating a proficiency level of the candidate solution at solving training cases.” 9/11/2007 Office Action at 4. The rejection made in the 9/11/2007 Office Action referred to the original language of claim 1. In the final rejection dated March 19, 2008, rather than identify how Kirshenbaum discloses the **amended** “determining a credibility rating” clause of claim 1, the Examiner dismissed the change as merely to the form rather to the substance of the claim language.

This assertion is clearly erroneous, as even a cursory review of the claim amendment will indicate a substantive change was made to this clause of claim 1.

It is clear that Kirshenbaum fails to disclose determining a credibility rating of the candidate solution, where the credibility rating indicates a degree to which the performance measure is **representative of the difficulty measure of the particular training case**. In the 9/11/2007 Office Action, the Examiner had identified “fitness measure” disclosed in Kirshenbaum as constituting the “difficulty measure” of claim 1. 9/11/2007 Office Action at 4. The Examiner also referred to a “fitness score” purportedly mentioned on page 3 of Kirshenbaum as constituting the “performance measure” of claim 1. Under this mapping of “performance measure” and “difficulty measure” to elements of Kirshenbaum made by the Examiner, there is absolutely nothing in Kirshenbaum to even remotely hint at a credibility rating of a candidate solution that indicates a degree to which the “fitness score” is representative of the “fitness measure” of a particular training case. Section 4.4 of Kirshenbaum, which is entitled “WINNER SELECTION,” cited by the Examiner in the 9/11/2007 Office Action, refers to selecting winners (winning candidate solutions) based on overall performance of the

candidates on all training cases. Kirshenbaum, p. 3, § 4.4, ¶ 1. Selecting a winning candidate solution, as taught by Kirshenbaum, has nothing to do with determining a credibility rating of the candidate solution that indicates a degree to which the performance measure (equated by the Examiner with “fitness score” of Kirshenbaum) is representative of the difficulty measure (equated with “fitness measure”) of the particular training case.

A further point of error made by the Examiner is the identification of “fitness measure” as taught by Kirshenbaum as constituting the “difficulty measure” of claim 1. Note that in Kirshenbaum, the fitness measures are calculated for corresponding **candidate solutions**. In other words, based on how well a candidate solution performs with respect to training cases, a corresponding fitness measure is derived for the candidate solution. In Kirshenbaum, the “fitness measure” was identified as being the “mean relative error over the training cases presented to the candidate during its training period.” Kirshenbaum, p. 3, column 1, ¶ 1.

Note that the fitness measure of Kirshenbaum is associated with a **candidate solution**. In contrast, claim 1 specifically recites that a set of training cases is provided “having respectively associated difficulty measures.” Claim 1 thus is clearly stating that the difficulty measures are **associated respectively with training cases**. There is absolutely no indication whatsoever in Kirshenbaum that the training cases in Kirshenbaum are associated with any measure—in fact, since the “fitness measures” of Kirshenbaum are associated with candidate solutions, such fitness measures are **not associated with the training cases**.

A further error made by the Examiner in the final rejection is the identification of “fitness score” as being the “performance measure” of claim 1. The term “fitness score” appears nowhere in Kirshenbaum. The Examiner cited page 3 of Kirshenbaum as disclosing “fitness score.” Page 3, in column 1, ¶ 2 refers to “scoring” and obtaining a “best score.” The scoring

mentioned in this passage of Kirshenbaum refers to scoring of a candidate presented with a set of training cases. The scoring is provided by the fitness measures mentioned earlier on page 3. Thus, it is clear that the scoring or score mentioned on page 3 of Kirshenbaum is the same as the fitness measure discussed earlier in Kirshenbaum. Thus, effectively, what the Examiner has done is to equate the same item, namely "fitness measure" in Kirshenbaum, as constituting both the "difficulty measures" and "performance measure" of claim 1. Such a reading is clearly improper, particularly since the "difficulty measures" of claim 1 are associated respectively with training cases, while the "performance measure" is of the candidate solution that operates on a particular training case.

Another point of error made by the Examiner is the assertion that Kirshenbaum discloses the last clause of claim 1, namely "modifying the difficulty measure **of the particular training case** based on the performance measure of the candidate solution operating on the particular training case and the credibility rating of the candidate solution." The Examiner in the 9/11/2007 Office Action cited page 3 and Fig. 3 of Kirshenbaum as purportedly disclosing this feature of claim 1. 9/11/2007 Office Action at 4. Specifically, the Examiner noted that "the fitness measure converges [sic] is due to improvement in each generation. Hence, the difficulty measure of each case much be modified." *Id.* Converging the fitness measure of a candidate solution has nothing to do with modifying the difficulty measure **of the particular training case**. Kirshenbaum provides absolutely no indication of any measure associated with a training case, and in particular, Kirshenbaum provides no teaching of associating a difficulty measure with a training case. Therefore, it is impossible for Kirshenbaum to disclose modifying a difficulty measure of a particular training case.

In view of the foregoing, it is clear that claim 1 and its dependent claims are not anticipated by Kirshenbaum.

The final rejection also asserted that the term “for” was treated as an intended use. 3/19/2008 Office Action at 5. It is noted that Appellant has made arguments with respect to specific elements appearing in the body of claim 1. Therefore, the assertion that “for,” as used in the preamble of claim 1, is “treated as intended use” is irrelevant to the arguments presented by the Appellant. Appellant is not addressing whether or not the language appearing the preamble of claim 1 is an intended use limitation or whether such language should be given patentable weight.

Reversal of the final rejection of the above claims is respectfully requested.

**B. Claims 3 and 5 Rejected Under 35 U.S.C. § 103(a) as Unpatentable Over Kirshenbaum Alone.**

**1. Claims 3, 5.**

In view of the defective rejection of base claim 1 over Kirshenbaum, it is respectfully submitted that the obviousness rejection of dependent claims 3 and 5 is also defective.

Reversal of the final rejection of the above claims is respectfully requested.

### CONCLUSION

In view of the foregoing, reversal of all final rejections and allowance of all pending claims is respectfully requested.

Respectfully submitted,

Date: \_\_\_\_\_

8/18/2008



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## VIII. APPENDIX OF APPEALED CLAIMS

The claims on appeal are:

1. A processor-based method for determining difficulty measures for training cases used in developing a solution to a problem, comprising:
  - providing a set of training cases having respectively associated difficulty measures;
  - operating a candidate solution on a particular training case;
  - determining a performance measure of the candidate solution operating on the particular training case;
  - determining a credibility rating of the candidate solution, the credibility rating indicating a degree to which the performance measure is representative of the difficulty measure of the particular training case; and
  - modifying the difficulty measure of the particular training case based on the performance measure of the candidate solution operating on the particular training case and the credibility rating of the candidate solution.
2. The method of claim 1, wherein determining the credibility rating comprises:
  - selecting one or more training cases from the set of training cases based on the difficulty measures of the one or more training cases;
  - determining performance measures of the candidate solution operating on each of the one or more training cases; and
  - computing the credibility rating based on the performance measures of the candidate solution operating on each of the one or more training cases.
3. The method of claim 2, wherein the one or more training cases does not include the particular training case.
4. The method of claim 1, wherein providing the set of training cases having respectively associated difficulty measures comprises initializing a difficulty measure of each training case in the set of training cases to a predetermined value.

5. The method of claim 4, wherein the predetermined value is a maximum value.
6. The method of claim 1, wherein:  
providing the set of training cases comprises associating each training case in the set of training cases with a target output;  
operating the candidate solution on the particular training case comprises obtaining an output from the candidate solution operating on the particular training case; and  
determining the performance measure of the candidate solution operating on the particular training cases comprises comparing the candidate solution output to a target output of the particular training case.
7. The method of claim 6, wherein comparing the candidate solution output to the target output of the particular training case comprises calculating a value corresponding to a deviation between the candidate solution output and the target output of the particular training case.
8. The method of claim 1, wherein modifying the difficulty measure of the particular training case comprises modifying the difficulty measure based on a weighted average of the performance measure and a previous value of the difficulty measure.
9. The method of claim 8, wherein a weight of the weighted average is based on the credibility rating and a base learning rate.
10. The method of claim 1, wherein modifying the difficulty measure comprises maintaining the difficulty measure within a predetermined interval.

**IX. EVIDENCE APPENDIX**

None.

**X.     RELATED PROCEEDINGS APPENDIX**

None.